

Patent Claims:

1. Method of determining the vehicle reference speed of an all-wheel-drive vehicle, wherein the vehicle reference speed is determined from one or more wheel speeds, characterized by the following steps:
 - determination of a vehicle acceleration from the vehicle reference speed and/or from one or more wheel speeds,
 - determination of a drive torque and/or measurement of the vehicle acceleration with a sensor,
 - comparative analysis of the determined vehicle acceleration and the drive torque and/or the measured vehicle acceleration, and
 - modification of the vehicle reference speed in dependence on the comparative analysis.
2. Method as claimed in claim 1, characterized in that a tabulated acceleration is read from a table in the comparative analysis based on the drive torque, and is compared with the determined acceleration.
3. Method as claimed in claim 2, characterized in that the table contains rising tabulated accelerations for rising drive torques, but may contain comparatively high tabulated accelerations for very low drive torques and/or for drag torques.

4. Method as claimed in claim 2 or claim 3,
characterized in that the drive torque is
the engine output torque, and in that the reading out from
the table is also effected based on the gear step.
5. Method as claimed in claim 4,
characterized in that the table for higher
gear steps contains lower tabulated accelerations.
6. Method as claimed in any one of claims 2 to 5,
characterized in that the vehicle reference
speed is modified when the determined acceleration is
higher than the tabulated acceleration.
7. Method as claimed in any one of the preceding claims,
characterized in that in the modification
operation, the vehicle reference speed is extrapolated
with the tabulated acceleration or an acceleration
measured by a sensor.
8. Method as claimed in any one of the preceding claims,
characterized in that the method is
implemented in a vehicle equipped with a center clutch
that can be influenced.
9. Method of detecting an incorrect vehicle reference speed
of an all-wheel-drive vehicle, wherein the vehicle
reference speed is determined from one or more wheel
speeds and/or is extrapolated by way of given values,
characterized in that

one or more wheels are decoupled from the drive and the detection is effected with reference to the running behavior of the decoupled wheel(s).

10. Method as claimed in claim 9,
characterized in that decoupling is effected in dependence on the driving situation of the vehicle.
11. Method as claimed in claim 10,
characterized in that several of the following criteria can be polled to detect the driving situation:
 - activation of a traction slip control operation,
 - extrapolation of the vehicle reference speed,
 - drive torque and/or measured vehicle acceleration,
 - one or more wheels exhibit traction slip,
 - type of influencing of drive torque by a traction slip control operation,
 - stability of the running behavior of the wheels,
 - comparison of one or more wheel speeds with the vehicle reference speed.
12. Method as claimed in claim 9 or 10,
characterized in that decoupling lasts less than 2 seconds.
13. Method as claimed in any one of claims 9 to 12,
characterized in that in the detection operation, reference is made to the running behavior of the decoupled wheels after decoupling.

14. Method as claimed in claim 13,
characterized in that the gradient of the
rotational speed of the decoupled wheels is examined.
15. Method as claimed in claim 14,
characterized in that detection of an
incorrect vehicle reference speed is confirmed when the
gradient is more negative than a negative threshold value.
16. Method as claimed in any one of claims 1 to 8,
characterized in that when the reference
speed is modified during a defined duration, it is checked
with a method as claimed in any one of claims 9 to 14.
17. Method as claimed in claim 16,
characterized in that when detection of an
incorrect vehicle reference speed is confirmed, the latter
reference speed is determined with reference to the
running behavior of the decoupled wheel(s).
18. Device (20) for determining the vehicle reference speed of
an all-wheel-drive vehicle, comprising a first
determination system (21) for determining the vehicle
reference speed from one or more wheel speeds,
characterized by
 - a second determination system (22) for determining a
vehicle acceleration from the vehicle reference speed
and/or from one or more wheel speeds,
 - a third determination system (23) for determining a
drive torque,

- a comparison system (24, 25) for a comparative analysis of the determined vehicle acceleration and the drive torque, and
 - a modification system (26) for modifying the vehicle reference speed in dependence on the comparative analysis.
19. Device as claimed in claim 18, characterized by a memory (24) for storing a table, wherein a tabulated acceleration is read from the table in the comparative analysis based on the drive torque, and is compared with the determined acceleration in a comparator (25) of the comparison system.
20. Device as claimed in claim 18 or 19, characterized in that the device is implemented in a vehicle equipped with a center clutch that can be influenced.
21. Device for detecting an incorrect vehicle reference speed of an all-wheel-drive vehicle, comprising a system (40) which determines the vehicle reference speed from one or more wheel speeds and/or extrapolates it by way of given values,
characterized by
a decoupling system (41 - 43) which causes the decoupling of one or more wheels from the drive, and
a detection system (44) for detecting an incorrect vehicle reference speed with reference to the running behavior of the decoupled wheel(s).

22. Method as claimed in claim 21,
characterized by a checking system (42) for
checking the driving situation of the vehicle.
23. Method as claimed in claim 21 or 22,
characterized in that the detection system
(44) includes a gradient calculation system for the
calculation of the gradient of the rotational speed of the
decoupled wheels.